

ADDRESSING STUDENTS' NEEDS IN FOREIGN LANGUAGE LEARNING FOR ENGINEERS

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Abstract

The Polytechnic University of Valencia runs a number of mostly technician-level diploma courses in English for engineering students in Gandía (65 kms. away from Valencia). When facing the main difficulties in addressing these groups, the first step has always been a needs analysis. Over the past two years, the researcher studied the students' needs in lectures and classroom instruction, through informal meetings with professors. . It was noted that the main needs as shown by the instructors' common opinions reflect not only some of the major issues already observed in similar studies worldwide but also some local incidental issues. These opinions suggest that it is necessary to conduct more research in this topic and they also suggest some measures which can be taken to cope with these expected deficiencies. Additionally, it was concluded that it is very important to reshape the current approaches to FL instruction for engineering students and to focus on whether these students require more academic or communication skills.

Index Terms classroom interaction, foreign languages, needs, professors, teaching methodology,.

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The Polytechnic University of Valencia runs a number of mostly technician-level diploma courses in English for engineering students in Gandía (65 kms. away from Valencia). When facing the main difficulties in addressing these groups, the first step has always been a needs analysis. Over the past two years, the researcher studied the students' needs in lectures and classroom instruction, through informal meetings with professors. . It was noted that the main needs as shown by the instructors' common opinions reflect not only some of the major issues already observed in similar studies worldwide but also some local incidental issues. These opinions suggest that it is necessary to conduct more research in this topic and they also suggest some measures which can be taken to cope with these expected deficiencies. Additionally, it was concluded that it is very important to reshape the current approaches to FL instruction for engineering students and to focus on whether these students require more academic or communication skills.

1. Introduction

Engineering students at the Polytechnic University of Valencia are usually mixed ability learners. Apart from their different proficiency levels, they also have different attitudes towards foreign language learning and its use in their professional future which range from casual or accidental knowledge to the belief that little can be done in their professional field without a high working level of two or three languages. This is

especially true for those students who find that most books in their field are written in English or German (Zou., 1998). Consequently, most engineering professors face two main realities: on one hand, there are students for whom L2 is just another requirement; on the other we have learners who make great efforts to learn, read and work as much as possible in the L2. In their professional career engineering students may believe that foreign languages will be one of their most useful tools (Buxton 1998; Boschetto-Sandoval, & Deneire & Sandoval, 1998). However, they still face great difficulties when it comes to learning them. During recent years, more and more students have been considering studying foreign languages outside school for professional purposes and as an incidental factor for working achievement. This paper, divided into three sections, discusses the characteristics and the needs of these students as well as a series of proposals to improve their attitude, interest, and possibilities of succeeding in the study of the English language. To approach this goal, this paper addresses the following topics:

- 1- Engineering students' learning difficulties perceived by their instructors;
- 2- Needs-oriented classes;
- 3- Possible recommendations for prospective engineering ESP professors.

This presentation deals mostly with topics such as methodology or techniques suggested for engineering classes. It also stresses their impact on students' views towards reading instruction, working in groups, and exploring ideas to improve the subject.

2. Engineering Students' Learning Difficulties Perceived by Their Instructors

Although a large number of studies have been conducted at the Polytechnic University of Valencia at Gandía researching into teaching, none has been carried out in ELT classes for Engineering. Therefore, many of the most significant problems related to this type of student remain unclear. The data for this presentation have been collected in informal office and cafeteria discussions with two instructors. Both professors acknowledged the initial difficulties of teaching foreign languages to these groups. Not only do most students show a lack of second language skills, and, in many cases, an "accidental" interest in learning English or German, but there is also an excessive number of students in each class (some reports show that enrolment in some classes at the UPV may be as high as 175 students). In Gandía, enrolment is usually limited to between 45 and 60. This might be an acceptable number for other classes but it seems hard to believe that there can be any real possibility of communication or learning with such a great number of students.

Many students consider their worst initial problem to be that they had poor foreign language skills before entering the school. Their instructors also add that many students also have problems in the L1. Indeed, one of the most significant problems over the last 7 years which the college has been noticing is that many final projects presented in the school do not fit the minimum language requirements, and that many project advisors spend more time with their students' syntax, morphology and spelling in written papers than discussing their actual subject contents. Given the students' limited language skills in L2, it is also curious to find that many of them want to complete their university degree abroad through the Erasmus programme (Kirchner 1999). The two instructors used as the author's main source of information repeatedly stated that many of their students would not fulfil the minimum requirements to be competent at an intermediate English level, which is close to a good 12th grader (2^o *Bachillerato* student). However bad this may seem,

it seems odd that instructors of EFL for the travel and tourism industry in Gandía still believe that the average student of civil engineering is usually more competent in foreign languages than the typical student of Tourism, and it is indeed true that sometimes the latter shows even less interest in learning than the former. While this belief may not be real, it clearly shows that some of the engineering students would gladly work hard to learn the foreign language (Dlaska 1999). For instructors, however, one of the difficulties is that there is little relationship between effort and achievement. Many of the learners state at the beginning of the college period that they value communication overall. In contrast, it is recognised at E.P.S. Gandía that despite the huge number of Erasmus students, most of whom are English or German native or near-native students, there is little interaction and conversation exchange between them and the Spanish students. Given this fact, most students enrolled in English courses feel more secure in regular syntax and translation classes with little oral work which, in general, is heavily penalised in their evaluations by the teacher. Some may adduce that today more and more communication is done electronically by e-mail and Internet and that telephoning has drastically been reduced in the last five or ten years. But undoubtedly these are excuses for a dire situation that needs to be remedied. From the data drawn from the informal conversations held with the instructors, it was concluded that instructors believe that:

- 1) The students felt the need to achieve a competent level of English while in college;
- 2) Students who attend the E.P.S. Gandía have very different levels of competence in the L2 and this makes the instructors' job extremely difficult because often they do not know exactly on which students to focus;
- 3) It is very hard to put any communication activities into practice because of the very large numbers of students attending the classes;
- 4) Professors would be happy if they could also impart some learning and language strategies that could be valuable for the students' future language development;
- 5) There should be more and smaller groups;
- 6) English should be divided into proficiency classes;
- 7) The college needs special courses for those students who have studied languages other than English in high school; and
- 8) Students are concerned about the need to reinforce English through out-of-curriculum courses and activities (Sediva & Koslova 1999).

The same study researched teacher's beliefs regarding which teaching procedures and methodology were optimal for teaching English for engineering, which elements were emphasized in the instruction and which may also be desirable. Both instructors responded that reading is the most important part of their teaching effort, as it very much was for the students while in secondary school. As in previous studies (García Laborda 2002), teachers have the feeling that private schools offered far better language instruction than their public counterparts. This makes teaching even harder at advanced levels. Moreover, one of the most critical issues instructors face is their limited familiarity with their subject. This is one of the main reasons why students do not regard their classes highly. Additionally, this teachers' lack of specific preparation makes their job even harder as they need to spend an great amount of time for class preparation (Bynom, A. 2000; Braine, A. 2001) and get support from other teachers from the field, as they are absolutely certain

that no current ELT books can give them much help (McDonough, J. 1998). Apart from this, most students believe that ESP classes should not be on the curriculum, and that they would be better off attending outside English classes than the university English courses. Reiterating the above, the reader should consider that the students frequently considered speaking and writing skills to be the most important part of their language experience (García Laborda 2001); and they believe that the English taught in their classes is not very realistic and has little validity for their future (Flowerdew 2000). Professors at the E.P.S.G. in Gandía think that there should be some kind of teacher training courses that helps them to familiarise themselves with the target subject. However, despite the fact that there is no systematic help in their training in this field at the institution, they showed genuine interest in pursuing further studies to broaden their professional development [3].

Without the specific knowledge of particular realities in their field of teaching, misunderstandings with profound effects are inevitable, due to cultural and international regulations and circumstances. Overall, engineering ELT instructors expressed their interest in improving the general courses. They also showed a certain degree of scepticism towards the validity of their teaching for general English learning. However, they rely on the fact that its validity is given by the special emphasis on a highly specialised type of instruction that would otherwise be unavailable (Ward 1999).

3. Needs-oriented Classes

When reviewing the perceptions of Gandía engineering professors, the researchers found that there is a wide gap between the students' school L2 attainments, their college instruction and real life foreign language needs (Dlaska 1999). It is especially true that while most of the learners claim communicative activities in the EFL classroom they also recognize that their expectations in their professional career are limited to being able to use written communication proficiently (Flowerdew 2000). The study also reviewed the types of the most extensively used exercises. Of these, translation, dialogue (mainly as warm-up and follow-up activities), reading, questions and answers, and directed writing are the most common, while grammar and grammar drills were mostly avoided (also Rao, 2002). However, it seems clear that students demand grammar teaching as a way of facilitating production. Overall, according to the instructors, the following activities should have a central role in ELT engineering instruction:

- 1) Comprehensive class presentations (also (Mueller, 2000; Tubtimtong 1998);
- 2) Programmed pair work;
- 3) Short grammar explanations;
- 4) Vocabulary exercises;
- 4) Whenever possible, teacher – student oral interaction;
- 5) Extensive reading followed by both skimming and scanning exercises.

One of the inconveniences faced by instructors is the oral component of the course. They acknowledge that not only is class size a problem but so is the learner's fear of communicating verbally, which makes oral activities hard to practice. Most students bring along problems from high school where there was little or no interest at all in getting students to communicate. Therefore spontaneous activities are usually limited.

One critical point that needs further research is the instructors' beliefs regarding foreign language learning for technicians. Although there have been significant developments over the last 15 years in analysing instructors' attitudes towards their teaching methodology, at this time it is difficult to find any related to English teaching for science and technology. Thus, it is a must to determine the teachers' opinions about the following issues:

- (1) The causes and effects of *engineering* students' beliefs about the way they should be taught;
- (2) The acknowledged differences between the teachers' and students' beliefs and the school program;
- (3) The facilitating relationship between previous expertise in language teaching and the specific needs of the scientific field; and
- (4) Individual needs in teaching methodology.

Professors believe that many students in Gandía have low self-esteem as English learners; some even believe that they will hardly become better learners through the classroom instruction. Sometimes, there may seem to be a broad gap between what learners believe they should be taught and what they really receive through their classroom instruction. If motivation for English learning is a must, repeating students may be easily deceived by the fact that no matter what they do (extra classes, language schools and private schools, intensive courses, and the like), there is no chance that they will catch up with the course material. They feel that their classes tend to be an intense teacher-centred monologue or uncorrected group work in pairs. At this point, it is necessary to state that all through the long conversations held with both instructors, they simply thought the students should be taught using these elements:

- 1) Simple grammar structures (maybe reinforcement of some knowledge supposedly acquired in high school);
- 2) Extensive vocabulary lists on the engineering science;
- 3) Pre-fabricated patterns for common use both for reading and writing;
- 4) Specific training in intercultural features (for example, measures) and different international engineering codes and regulations;
- 5) Learning strategies;
- 6) Communication strategies;
- 7) Shorter but more contextualized listening activities (many textbooks have listening exercises up to 10 minutes long, which are very demanding and, generally speaking, monotonous and boring);
- 9) Training in the English language by using the World Wide Web and E-mail interaction (Serdyukov & Stvan 2001; Florez 2000).

It is clear that beliefs about foreign language learning, language learning strategies, and language classroom anxiety modify the extent, interest and degree of the learning process. This analysis of results reveals overt discrepancies between professors' and

students' views regarding foreign language instruction. Most learners stated that only a few needs were fulfilled by their classes and learning materials. Consequently, their anxiety about the gap between their ideal situation and their class utility was significantly controlled by this context.

Instructors recognized that it was necessary to re-examine their current situation to determine and identify their students' needs (especially for the listening-speaking slow students). Moreover, the conversations manifested that students need to acquire not only linguistic knowledge but also professional behaviour and intercultural patterns (Soheili, Barjasteh, & Al Qadhi 2001) that can be beneficial for their prospective careers. In addition, the researchers strongly recommend building on oral communication skills and basic practice along with certain types of written texts (such as letters, E-mail, and faxes).

4. Possible Recommendations for Prospective Engineering Science ESP Professors

As a final point, it would be advisable to propose a few ideas for methodology and for the design of the engineering English classes. Courses should be contextualized in engineering no matter how difficult it may be (Pally 2000). Also, it is important to consider the course pre-requisites. First, students who have taken French in secondary school should have a free elective in Basic English (for science and technology, if possible). Other papers (García Laborda 2002), have recommended a course of at least forty hours or even additional courses that the university language service (ACCLE) offers. Additionally, the students should be provided with extra real and graded readings (Ward 2001) that can lead them to attain a specific competence level. It would be even better if they could enrol also in computer assisted language courses that can be accessed on Internet. In conclusion, it is important to look forward into the future (Klaassen.& De Graaff 2001; Curriculum Development Guidelines 2001) with the hope that studies similar to this can help to improve the quality of teaching at the Universidad Politécnica de Valencia and other institutions all over the world which have the same kind of problems.

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References

- Boschetto-Sandoval, S. M.& Deneire, M. & Sandoval, C. A. 1998 "The Modern Language Curriculum in a Technological University: A Non-Departmentalized Case Study", *Canadian Modern Language Review*: 54, 2, 147-71.
- Braine, A. 2001. "When Professors Don't Cooperate: A Critical Perspective on EAP Research", *English for Specific Purposes*: 20, 3, 293-303.
- Buxton, C., A.. 1998 "Improving the Science Education of English Language Learners: Capitalizing on Educational Reform", *Journal of Women and Minorities in Science and Engineering*: 4, 4, 341-69.
- Bynom, A. 2000 "Team Teaching: Plus or Minus ESP", *Forum*: 38, 1. retrieved April 15, 2003. Available at web site <http://exchanges.state.gov/forum/vols/vol38/no1/p38.htm>
- "Curriculum Development Guidelines. New ICT Curricula for the 21st Century: Designing Tomorrow's Education". 2001. ERIC Q & A. *ERIC Higher Education Report ERIC Clearinghouse on Higher Education*. ERIC ED459343

- Blaska, A.. 1999. "Suggestions for a Subject-Specific Approach in Teaching Foreign Languages to Engineering and Science Students", *System*: 27, 3, 401-17.
- Florez, M., C. 2000 "Finding and Evaluating Adult ESL Resources on the World Wide Web". ERIC Q & A. *ERIC Higher Education Report ERIC Clearinghouse on Higher Education*. ERIC ED445564
- Flowerdew, L. 2000 "Using a Genre-Based Framework To Teach Organizational Structure in Academic Writing", *ELT Journal*: 54, 4, 369-78.
- García Laborda, J. 2001 "Las actitudes ante el inglés con fines específicos en el ámbito universitario", *Estudios de Metodología de la Lengua Inglesa (II)*, chap. 9, 109-121.
- García Laborda, J. 2002 "Incidental Aspects in Teaching ESP for Turismo in Spain. The Turismo Learner: analysis And Research", *ESP World*: 3, retrieved April 15, 2002 available at web site http://www.esp-world.info/Articles_3/ESP%20for%20Turismo%20in%20Spain.htm
- Kirchner, D., 1999. "German Studies, Culture Studies, and Institutional Structure: Possibilities and Limitations", *ADFL Bulletin*: 30, 3, 23-27.
- Klaassen, R. G.; De Graaff, E. 2001. "Facing Innovation: Preparing Lecturers for English-Medium Instruction in a Non-Native Context", *European Journal of Engineering Education*: 26, 3, 281-289.
- McDonough, J. 1998. "Recent Materials for the Teaching of ESP", *ELT Journal*: 52, 2, 156-165.
- Mueller, E. A. 2000 "Teaching Chinese Engineering Students Oral Presentation Skills", *ERIC Higher Education Report ERIC Clearinghouse on Higher Education*. ERIC, ED445537.
- Pally, M. 2000. "Sustained Content Teaching in Academic ESL/EFL: A Practical Approach" *ERIC Higher Education Report ERIC Clearinghouse on Higher Education*: ERIC ED448596.
- Sediva, G. & Koslova, M. 1999. "Facilitating Students' Autonomy", *ASHE-ERIC Higher Education Report ERIC Clearinghouse on Higher Education*. ERIC, ED456995.
- Serdyukov, P. & Stvan, L., S. 2001. "ESL/EFL Web Sites: What Do Users Need and What Can They Expect To Find There?" *ERIC Higher Education Report ERIC Clearinghouse on Higher Education*. ERIC ED456818.
- Soheili, A., Barjasteh, D., & Al Qadhi, L. 2001 "An Outline of Technicisation Theory". *Journal of Technical Writing and Communication*", 31, 2, 189-199.
- Tubtimtong, W. 1998. "Teaching From Needs to Goals: ESP Materials Writing for Thai Postgraduate Students", *ERIC Higher Education Report ERIC Clearinghouse on Higher Education*. ERIC, ED424761.
- Ward, J. 1999. "How Large a Vocabulary Do EAP Engineering Students Need?". *Reading in a Foreign Language*: 12, 2, 309-23.
- Ward, J. 2001. "EST: Evading Scientific Text", *English for Specific Purposes*: 20, 2, 141-152.
- Zou, Y. 1998. "English Training for Professionals in China: Introducing a Successful EFL Training Programme", *System*: 26, 2, 235-48.